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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,422	09/10/2003	Kazuto Kinoshita	241812US3DIV	3186

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OLDS, MAIER & RICHARDSON
1000 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
PADGETT, MARIANNE L	

ART UNIT	PAPER NUMBER
1792	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/658,422	KINOSHITA ET AL.	
	Examiner	Art Unit	
	Marianne L. Padgett	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31 and 32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *31-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. Claim 32 in his rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The original application has been reviewed for support for using liquid developer in some way in an etching process, possibly associated with circuit pattern formation &/or uniform coating, and no support for the claims as amended was found. It is noted that in the last sentence of the specification on page 27 is taught that "The dry-washing treatment makes it possible to apply a liquid developer or the like uniformly on the substrate surface...", which only supports uniform application, not patterned & has no mention of circuit patterns. It is further noted that in the **prior art** discussion on page 1, line 16+ of the specification, there is general discussion of circuit patterns exemplified by transparent electrodes on TFT substrates, associated with etching treatments, however there's no mention of liquid developers or this being combined with applicant's UV irradiated water vapor "dry washing" process, nor did applicants cite any clear support for such in their specification, or by citing definitions from relevant prior art.

Also note that while the substrate supports "conveyors" & "conveying", it cannot be properly said to support "convoying", which is what is now claimed in claim 32.

2. The disclosure is objected to because of the following informalities: in reviewing the specification the examiner noted that proofreading is needed, for example see page 1, line 18, where "suc" is probably a misspelling of -- such --.

Appropriate correction is required.

3. Claims 32 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the amended claim 32, the phrasing "**subjecting** the reducing and oxidative members [H*] and [*OH] to cause a reaction with the decomposed organic substances" (emphasis added), still does not make sense as written, and appears to be either non-idiomatic or a fragmented phrase missing some words. To make sense, one **needs to subject the identified members something**, in order to cause the claimed reaction (i.e. subjecting the... members to want?), thus the claim language still leaves the reader to guess what is intended to be the cause of the reaction, i.e. is there a missing limitation, or was "subjecting" the wrong word choice? For instance, if the decomposed organic substances are being subjected to the reducing & oxidative members, then appropriate phrasing might be --wherein the reducing and...are subjected to the decomposed organic substances to cause a reaction with the decomposed organic substances--.

In the preamble, the amendment therein, in line 2 of claim 32 reads "to form a circuit pattering uniformly on the entire surface..." which is self-contradictory limitations, since a circuit pattern, cannot be a pattern for a circuit if it is uniformly over the entire surface, thus the meaning of this phrasing is vague and indefinite. is further noted that the stated intended to use in the preamble of "to apply a liquid developer for the sake of etching" provides an intent that the liquid developer is to be used in some unspecified fashion in an etching process or techniques, which may or may not form a pattern since as written the contradictory limitations include all options as taking place at once. It is noted a given this vague and indefinite preamble, the coating stage in the last two lines of the claim 32 will be considered to essentially read on any coating deposited, that could have some involvement in an etching process, especially considering as previously noted the cited pages 26-27 of the specification (bridging paragraph) were not found to provide any significant meaning to the term "liquid developer", as this disclosure also provided no clue as to what on the substrate may be being developed, for what purpose, or what effect, or what the liquid developer might include, such that the claimed treating process of the substrate of

unspecified material, has undeterminable effect when a liquid developer is apply, thus what the claim might read on is also unclear.

In the phrase at the end of claim 32, added by the 10/31/2007 amendment, it is noted that instead of the previously claimed "conveyor", which should probably be -- conveying -- in the claimed context, applicants have claimed "convoying", which is what a large number of trucks or vehicles due on the road, hence this word choice appears to be a typographical error.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 31-32 remain rejected under 35 U.S.C. 103(a) as being unpatentable over **Suzuki** (6,217,665 B1), in view of **Jüstel et al.** (6398970 B1), and/or **Hiramoto et al.** (JP 7-179629).

Suzuki teaches cleaning substrates that may have organic or inorganic contaminants thereon, in advance of a wet cleaning process, by irradiating that substrate in atmospheric air (i.e. is a mixture of oxygen, water vapor, nitrogen, inert gases, etc.) with a UV light source, such as a discharge lamp or lamps, where it is particularly noted that the UV light source should include wavelengths 184.9 & 250 3.7

nm. The UV treatment cleans the substrate (glass) of organic matter by chemically removing it & the surface tension of the glass is reduced to improve the wettability for subsequent wet cleaning in pure water, after which may follow another irradiation treatment with ultraviolet rays or "draining with an air knife", which is considered to read on drying, and thereafter subsequent coating processes, such as flexographic printing of a polyimide film or coating with a photoresist, or the like may be applied, which as they are liquid depositions might be considered to read on possible meanings of "liquid development", as they further develop the substrate and are liquid. In Suzuki see the abstract; figures 1-24 illustration of moving conveyors; col. 1, lines 10-15; col. 1, lines 34-col. 3, lines 13; examples, especially col. 3, lines 24-43 & col. 4, lines 5-25; and claims, especially 1-3, 5, 8-9, 11-24, particularly noting claims 11 & 23-24. Note that the claimed process while requiring "a mixed atmosphere of an inert gas and water vapor" **does not exclude** the presence of other components in that mixed atmosphere, as long as inert gas & water vapor are present in any proportion, which will always be true in air.

The teachings of Suzuki differ from those of applicant by not specifying that their discharge lamp is a "dielectric barrier discharge lamp", however as they teach any discharge lamp that includes sufficient amount of 184.9 & 250 3.7 nm wavelengths is not limited by whether or not the discharge lamp is a dielectric barrier type discharge lamp, especially considering a generic "dielectric barrier discharge lamp" produces no particular wavelengths & applicants' claims encompass the entire ultraviolet light spectrum, hence claiming the same reaction of water vapor in the presence or under the influence of any wavelength of ultraviolet light, hence while Suzuki does not discuss the water vapor component of air, it's decomposition products under ultraviolet light employed & their effects on the organic contaminants present on the substrate surface, lacking any evidence to the contrary, the water vapor present in air, along with the inert gas component of air or the taught additional inert gas added as a diluent, would have inherently undergone the same water splitting reaction & consequent effect on organic contaminants, since generic discharge lamp versus dielectric discharge lamp does not change the nature of a UV

wavelength (particular gases used in these lamps can affect the particular wavelengths, but no specific species of dielectric discharge lamp, hence no specific wavelengths are claimed or required).

With respect to dielectric discharge lamps in particular, it would've been obvious to one of ordinary skill in the art to employ dielectric discharge lamps that produce wavelengths required by Suzuki, given that such discharge lamps are seen to be known as taught by Jüstel et al. (abstract; spectral range between 230-300 nm) and/or Hiramoto et al. (English abstract or [0013] UV wavelengths of 160-200 nm).

6. Jackson (5,236,602), in its background (col. 1, lines 26-40) provides information cumulative to the above process in that it discloses that wavelengths employed by Suzuki are absorbed by the contaminant hydrocarbon materials causing dissociation thereof, so as to fragment & resultant formation of water among the decomposition products, such that even if dry air had been employed (not something suggested it disclosure of Suzuki (665)), the taught treatment of cleaning organic contaminants would have provided water vapor to the cleaning environment, which would have proceeded to react with the applied UV & any remaining contaminants.

Yoshida et al. (6,508,990 B1) has a similar teaching to that of Jackson's background, on col. 1, lines 21-35, and further teaches a UV radiation treatment where an active species generator, such as ozone or oxygen, is present to react with organic substances and decompose them (col. 7, lines 44-52), with taught radiation sources include low-pressure mercury vapor lamps with 185 & 254 wavelengths, or alternately a UV light source, such as a dielectric barrier discharge lamp having 172 nm wavelengths or others (col. 8, lines 64-col. 9, lines 12), thus providing another alternative & equivalent reference to Jüstel et al. &/or Hiramoto et al. for expected useful dielectric barrier discharge lamps in the process of Suzuki.

Miki et al. (6,610,168 B1) is of uncertain status as prior art, as it's filing date 8/14/2000 is 10 days after applicants, however he has a CIP parent filed 10/12/1999, which was abandoned & not available for review, however Miiki et al. performs steam cleaning under UV radiation, which may be done in the

presence of an air layer (col. 2, lines 45-52; col. 3, lines 4-10 & 41-47; cols. 13-14), assuming air is atmospheric air there is therefore inert gas present, and while a moving conveyor is not discussed, the process is for cleaning structures in making semiconductor circuits & removing photoresist, the types of procedures that would be have been expected to be done on moving conveyors, especially considering process such as Suzuki (665) discussed above. However, such rejection is presently superfluous, especially considering Miki et al. is uncertain status as prior art.

Other art of interest includes Curry et al. (6,692,694 B1) who sprays in aqueous aerosol in atmospheric air on surfaces to be cleaned while simultaneously illuminating with UV radiation, where it is noted that the aqueous aerosol will by its very nature contain water vapor of a higher concentration and the atmospheric air, which provides the presence of inert gas, however Currie et al.'s process has no moving conveyor. Other art of interest but not prior art includes Jackson (2004/0011378 A1); Kuriyama et al. (2007/0117365 A1); & Suzuki (2004/0103913 A1).

7. Applicant's arguments filed 10/31/2007 and discussed above have been fully considered but they are not persuasive.

Applicants argue against the application of Suzuki et al. to the claims due to the use of in oxygen-containing atmosphere, however well applicants claims do not require oxygen gas, their atmosphere is clearly oxygen containing, since water vapor contains oxygen, and furthermore even if applicants were arguing about oxygen gas containing atmosphere, there claims do not exclude the presence of oxygen gas, they merely do not require oxygen gas.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing

date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP/dictation software

1/22/2008

MARIANNE PADGETT
PRIMARY EXAMINER